FLUIDIZED BED INCINERATOR USING HIGH TEMPERATURE AIR

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Applicant(s): KOBE STEEL LTD
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- European:
Application number: JP19950190634 19950726
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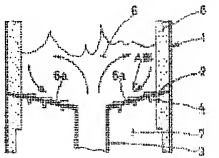
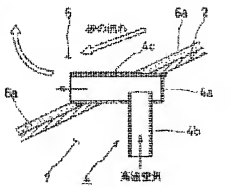
Abstract of **JP 9042636 (A)**

PROBLEM TO BE SOLVED: To achieve a lower security cost and a longer life of an air scattering device of a fluidized bed incinerator using high temperature air to be blown into the body of the furnace. SOLUTION: An air scattering device which is provided on a furnace bottom of the body 1 of a furnace to support a sand layer 6 and has a plurality of air scattering nozzles 4 for blowing high temperature air from an wind box 7 formed below the furnace bottom in the sand layer 6 and an unburned matter withdrawal port 3 at the center part lower than the outer circumference part is constituted of an orifice plate 2 alone where air blowoff pipes 4a of the air scattering nozzles 4 are welded to blow the high temperature air horizontally and made up of a heat resistant/wear resistant metal plate.; This achieves a lower security cost required for a refractory castable and a higher durability of a fluidized bed incinerator because the expansion of the orifice plate 2 is unbound. It is true that a thin static sand layer 6a is formed on the top surface of the orifice plate 2. But the sand idler will not block the fluidization of the sand in the sand layer 6 and the movement of unburned matters in the direction of an unburned matter withdrawal port 3 thereby enabling stable movement thereof for a long period of time.

(a)



(b)



Family list
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1 **FLUIDIZED BED INCINERATOR USING HIGH TEMPERATURE AIR**

Inventor: MATSUDA MASAO ; HOSODA HIROYUKI (+2)
Applicant: KOBE STEEL LTD
EC:
IPC: ***F23G5/30; F23C10/20; F23G5/44;*** (+9)
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Ｆ２３Ｇ　5/44	ＺＡＢ		Ｆ２３Ｇ　5/44	ＺＡＢＧ	
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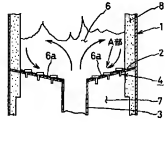
(54)【発明の名称】　高温空気を用いる流動床焼却炉

(57)【要約】

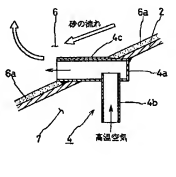
【課題】　炉本体内に６５０℃もの高温空気が吹込まれる高温空気を用いる流動床焼却炉の空気分散装置の保全費を安価にし、かつ長寿命にする。

【解決手段】　炉本体１の炉底に設けられて砂層６を支持し、砂層６内に炉底の下側に形成されてなる風箱７から高温空気を吹込む複数の空気分散ノズル４を有し、外周部よりも低い中心部に不燃物抜出口３を有する空気分散装置を、水平方向に高温空気を吹込む空気分散ノズル４の空気吹込管４ａが溶接され、耐熱・耐摩耗性金属板からなるオリフィス板２のみからなる構成にすれば、耐火キャスタブルに係る保全費が安くなり、またオリフィス板２の膨脹が拘束されないので流動床焼却炉の耐久性が向上する。勿論、オリフィス板２の上面に層厚の薄い静止砂層６ａが形成されるが、砂層６の砂の流動や不燃物の不燃物抜出口３方向への移動が妨げられないので、長期にわたって安定可動させることができる。

(a)



(b)



【特許請求の範囲】

【請求項１】　炉本体の炉底に設けられて砂層を支持し、該砂層内に前記炉底の下側に形成されてなる風箱から前記砂層を対流流動させ、かつ被焼却物を燃焼させるための高温空気を吹込む複数の空気分散ノズルを有すると共に、外周部よりも低い中心部に不燃物抜出口が設けられてなる空気分散装置を、水平方向に高温空気を吹込む前記空気分散ノズルの空気吹出管が接合され、耐熱・耐摩耗性金属板からなるオリフィス板のみの構成にしたことを特徴とする高温空気を用いる流動床焼却炉。

【請求項２】　炉本体の炉底に設けられて砂層を支持し、該砂層内に前記炉底の下側に形成されてなる風箱から前記砂層を対流流動させ、かつ被焼却物を燃焼させるための高温空気を吹込む複数の空気分散ノズルを有すると共に、外周部よりも低い中心部に不燃物抜出口が設けられてなる空気分散装置を、水平方向に高温空気を吹込む前記空気分散ノズルの空気吹出管が接合され、下方に凸の凹面鏡状に形成されてなる耐熱・耐摩耗性金属板からなるオリフィス板のみの構成にしたことを特徴とする高温空気を用いる流動床焼却炉。

【請求項３】　前記オリフィス板の上面に、前記不燃物抜出口を囲む耐熱・耐摩耗性金属板からなる砂流動防止堰堤を設けたことを特徴とする請求項１または２に記載の高温空気を用いる流動床焼却炉。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、特に汚泥や都市ごみ等の被焼却物を焼却する高温熱風を用いる流動床焼却炉に係る技術分野に属するものである。

【０００２】

【従来の技術】汚泥や都市ごみ等の被焼却物を焼却する流動床焼却炉の炉本体の炉底には、砂層を支持し、この砂層内に空気を吹込み、前記砂層を対流流動させると共に、この砂層に投入された被焼却物を燃焼させる働きをする複数の空気分散ノズルを有する空気分散装置が設けられている。このような空気分散装置は、例えば実公昭６０－９５５８号公報や特開平３－１２２４１１号公報に示されている。

【０００３】まず、実公昭６０－９５５８号公報に示されてなる従来例１に係る流動床焼却炉を、その断面図の図４（ａ）と、図４（ａ）のＣ部拡大斜視図の図４（ｂ）とを参照しながら、同明細書に記載されている同符号ならびに同名称を以て説明すると、炉体１の内部の底面に、空気分散板である空気分散装置４が傾斜して設けられている。この空気分散装置４の下側には空気室５が形成され、空気入口６より導かれた流動用兼燃焼用空気を取り入れるようになっている。この空気分散装置４は、図３（ｂ）に示すように、床板８と、空気分散ブロック９が複数個組合わされて炉底を構成し、その下側に多孔板１０（オリフィス板）を備えて形成されている。

そして、炉体１の上部には排ガスの出口３が設けられ、空気分散装置４の最も低い位置には不燃物等を取り出す排出口７が設けられている。なお、空気分散装置４により支えられてなるものは砂層１８である。前記床板８および空気分散ブロック９は耐火材、例えばステンレスファイバー入りの高強度耐摩耗キャスタブル等で作られている。その底面は、床板８の底面と同一平面に保たれているが、上部は床板８より突出し、その側面１１を貫通してほぼ水平方向に空気吹き出し口１２が設けられている。空気分散ブロック９の底面からは空気吹き出し口１２に連通する通路１３が設けられている。この多孔板１０は、隙間を隔てて平行に支えられた２枚の多孔単板１４，１５からなっており、上段の多孔単板１４は空気分散ブロック９と床板８の底面に接触して配備され、その小孔１６は通路１３の直下に設けられている。下段の多孔単板１５の小孔１７は、小孔１６の垂直方向に重ならないより外して配備されている。

【０００４】次に、特開平３－１２２４１１号公報に示されてなる従来例２に係る流動床焼却炉を、同明細書に記載されている同符号ならびに同名称を以て説明すると、この炉本体１の炉底には、その主要部断面図の図５に示すように、すり鉢状に形成され、中央部に不燃物抜出管９を有する空気分散板３（空気分散装置）が設けられている。この空気分散板３は、同図から良く理解されるように、上部側の耐火材と、その耐火材を支える金属板からなるオリフィス板とから構成されている。なお、オリフィス板を貫通する下端側が、このオリフィス板に固着され、上部側が耐火材を貫通してなる符号４，５は、炉本体１の下部側に設けられている風箱１０内の流動用兼燃焼用空気を空気分散板３で支えられている砂層８内に吹込む空気分散ノズルである。

【０００５】更に、上記何れの形式の流動床焼却炉の空気分散装置や空気分散板にあっても、風箱から砂層に流動用兼燃焼用の空気を吹込むものである。これにより流動している砂層に被焼却物が投入されると、投入された被焼却物は分散・解砕され、熱分解されると共に焼却される。

【０００６】

【発明が解決しようとする課題】上記のとおり、流動床焼却炉の空気分散装置は、金属板からなるオリフィス板と、その上の炉内側に設けられる耐火キャスタブルとから構成されている。オリフィス板の上面に耐火キャスタブルを設けるのは、不燃物をスムーズに排出させることと、オリフィス板に７００℃にも及ぶ砂層の温度が直接伝わらないようにすることとを狙いとしたものである。ところで、オリフィス板は、風箱内に導入される流動兼燃焼用空気の温度により熱膨脹する。従来の流動床焼却炉の場合のように、流動兼燃焼用空気の温度が１００℃程度であればオリフィス板の膨脹量は小さく、例えば、炉径が１７５０ｍｍの場合では３ｍｍ程度であって、特

に問題が生じるようなことがない。しかしながら、風箱に導入される流動兼燃焼用空気の温度によっては下記のような問題が生じる。

【0007】即ち、砂層温度維持のために補助燃料を投入するような流動床焼却炉、例えば汚泥焼却炉では補助燃料の節約（省エネルギー）の観点から排ガスの保有エネルギーを活用しており、次第に高温の流動兼燃焼用空気が風箱に導入されるようになり、近年では、例えば650℃もの温度の流動兼燃焼用空気が活用されることもある。650℃もの高温の流動兼燃焼用空気が風箱に導入されると、オリフィス板の膨脹量は大きくなり、例えば炉径が1750mmの場合では20mmにもなる。それに対して、耐火材の熱膨脹量は1mm程度しかないので、これらオリフィス板と耐火材との膨脹量差によって耐火材が破損するか、またはオリフィス板の伸びが耐火材によって拘束され、オリフィス板に高応力が発生し、高応力の発生の繰り返しによって炉本体とオリフィス板との固着部に亀裂が発生し、流動床焼却炉の寿命が短くなるという不具合が生じることになる。

【0008】空気分散装置をオリフィス板のみの構成にすれば、当然、上記のような問題が解決されると考えられる。しかしながら、この構成は不燃物抜出口を持たない流動床焼却炉に対して有効であり、不燃物抜出口を持つ流動床焼却炉に対しては不適当である。即ち、空気分散ノズルは通常オリフィス板から上方に突出しており、不燃物を排出できないからである。なお、空気分散装置をオリフィス板のみの構成にすると、オリフィス板の上面に静止砂層が形成され、この静止砂層によってオリフィス板に700℃にも及ぶ高温の砂の直接熱伝達が抑制される。

【0009】従って、本発明の目的とするところは、上記課題を解決し、保全費を削減しかつ耐久性に優れた高温空気を用いる流動床焼却炉を提供するにある。

【0010】

【課題を解決するための手段】上記課題を解決するために、本発明の請求項1に係る高温空気を用いる流動床焼却炉の空気分散装置が採用した手段は、炉本体の炉底に設けられて砂層を支持し、該砂層内に前記炉底の下側に形成されてなる風箱から前記砂層を対流流動させ、かつ被焼却物を燃焼させるための高温空気を吹込む複数の空気分散ノズルを有すると共に、外周部よりも低い中心部に不燃物抜出口が設けられてなる空気分散装置を、水平方向に高温空気を吹込む耐記空気分散ノズルの空気吹出管が接合され、下方に凸の凹面鏡状に形成されてなる耐熱・耐摩耗性金属板からなるオリフィス板のみの構成にしたことを特徴とするものである。

【0012】また、本発明の請求項3に係る高温空気を用いる流動床焼却炉の空気分散装置が採用した手段は、請求項1または2に記載の高温空気を用いる流動床焼却炉において、前記オリフィス板の上面に、前記不燃物抜出口を囲む耐熱・耐摩耗性金属板からなる砂流動防止堰堤を設けたことを特徴とするものである。

【0013】

【発明の実施の形態】本発明は、オリフィス板を耐熱・耐摩耗性金属板から形成し、空気分散ノズルのオリフィス板の上方への突出量を少なくすれば、砂層の流動が妨げられることがなく、しかもオリフィス板の上面に砂停止層を形成させ得ると共に、不燃物を不燃物排出口まで移動させるという機能を備えた高耐久寿命を有する流動床焼却炉を具現できると考え、流動床焼却炉を、炉本体の炉底に設けられて砂層を支持し、該砂層内に前記炉底の下側に形成されてなる風箱から前記砂層を対流流動させ、かつ被焼却物を燃焼させるための高温空気を吹込む複数の空気分散ノズルを有すると共に、外周部より低い中心部に不燃物抜出口が設けられてなる空気分散装置を、水平方向に高温空気を吹込む耐記空気分散ノズルの空気吹出管が接合され、耐熱・耐摩耗性金属板からなるオリフィス板のみの構成にしたものである。

【0014】

【実施例】以下、本発明の実施例1に係る高温熱風を用いる流動床焼却炉を、その主要部を示す断面図の図1（a）と、図1（a）のA部拡大図の図1（b）とを参照しながら説明する。

【0015】即ち、図1（a）に示す符号1は、内壁に耐火材8が張られてなる流動床焼却炉の炉本体で、この炉本体1の炉底には、砂層6を支え、最も低位置の中央部に不燃物を抜き出す不燃物抜出口3を有する浅いすり鉢状のオリフィス板2が設けられている。このオリフィス板2は、例えばIncoloy等の耐熱合金にコバルト系合金を肉盛りしたもの等からなる耐熱・耐摩耗性金属板から形成され、これには複数の後述する構成になる空気分散ノズル4が設けられている。前記炉底の下側には、例えば650℃もの高温空気が図示しない空気流入口から流入する風箱7が形成されている。なお、高温空気の温度は流動床焼却炉の排ガスの温度により得られるものであるため、流動床焼却炉の運転開始時には低温であるが、次第に高められ、安定運転状態になると650℃もの高温に高められる。

【0016】前記空気分散ノズル4は、オリフィス板2を貫通して溶接により水平に接合されている。この空気

分散ノズル４は、炉本体１の中心方向に向かって高温空気を吹き出す吹出口を有し、砂層６側の上側周面にコバルト溶射層４ｃ（耐摩耗層）を有すると共に、風箱７内への突出側が閉塞されてなる空気吹出管４ａと、この空気吹出管４ａに下方向きに突設され、風箱７内の高温空気が流入する空気流入管４ｂとから構成されており、空気吹出管４ａと空気流入管４ｂとは何れも前記耐摩耗層４ｃによって、対流流動する砂層６の砂による空気吹出管４ａの摩耗が抑制される。

【００１７】従って、風箱７内から空気流入管４ｂに流入した高温空気は空気吹出管４ａから炉本体１の中心方向に向かって吹き出し、吹き出す高温空気により砂層６の砂はオリフィス板２の中央部において上昇流動し、次いで炉本体１の内壁方向に水平流動する。そして、炉本体１の内壁により下降流動すると共に、オリフィス板２により不燃物抜出口３の方向に流動するというように対流流動する。このように対流流動している砂層６に汚泥や都市ごみ等の被焼却物が投入されると、被焼却物は分散・解砕され、熱分解されると共に焼却され、不燃物は対流流動する砂層６の砂によって不燃物抜出口３側に運ばれると共に、この不燃物抜出口３から系外へ排出される。

【００１８】汚泥や都市ごみ等の被焼却物はこのようにして焼却されるが、砂層６の砂の対流流動に際しては、図１（ａ）に示すように、オリフィス板２の上面に沿って層厚の薄い静止砂層６ａが形成されるので、従来のように耐火キャスタブルで覆われていなくても対流流動する砂層６から直接高温が伝わらず、またオリフィス板２の上面には空気分散ノズル４の空気吹出管４ａの一部が突出しているだけで、しかも突出部分は水平であるから、不燃物の斜め下方への移動が阻害されることがなく、不燃物は不燃物抜出口３から支障なく排出される。

【００１９】なお、砂層６の対流流動を妨げることなく静止砂層６ａを効果的に形成させるには、オリフィス板２の傾斜角度を１５°程度にするのが好ましい。また、静止砂層６ａといえどもときには一次的に流動するのでオリフィス板２は摩耗するが、上記のとおり、このオリフィス板２は耐熱・耐摩耗性金属板から形成されているので、その耐久性は実用上十分である。

【００２０】一方、オリフィス板２は少なくとも６５０℃もの温度の高温空気に晒されて熱膨脹するが、オリフィス板２の上面には従来のように耐火キャスタブルが設けられておらず、層厚の薄い静止砂層６ａが形成されているだけであるから、耐火キャスタブルが損傷を受けるようなことがない。また、上記のとおり、オリフィス板２の熱膨脹を拘束する耐火キャスタブルが設けられていないので、オリフィス板２に高応力が発生せず、流動床焼却炉の寿命に悪影響を与えるようなことがない。さらに、炉本体１の全高を少なくとも耐火キャスタブルの厚さに相当する分だけは低くすることができるので、流動床焼却炉の小型化に寄与することができ、また耐火キャスタブルの保全費の削減ならびに保全所要時間の短縮に伴う流動床焼却炉の可動率の向上に寄与することができる。

【００２１】次に、本発明の実施例２に係る高温熱風を用いる流動床焼却炉を、その主要部を示す断面図の図２を参照しながら説明すると、本実施例が上記実施例と相違するところは、同図から良く理解されるように、オリフィス板２の形状を、下側に凸の凹面鏡状に形成したものでかつて、これ以外は上記実施例に係る流動床焼却炉と全く同構成になるものである。

【００２２】従って、前記オリフィス板２の上面に静止砂層６ａが形成されると共に、オリフィス板２の上面には空気分散ノズル４の空気吹出管４ａの一部が突出しているだけであるから本実施例は上記実施例と同効である。但し、本実施例では、オリフィス板２が、上記のとおり、下側に凸の凹面鏡状に形成されているので、砂層６の砂の流動性が改善されると共に、例え板厚が同じであってもオリフィス板２が高強度になるという利点がある。

【００２３】本発明の実施例３に係る高温熱風を用いる流動床焼却炉を、その主要部を示す断面図の図３を参照しながら説明すると、本実施例が上記実施例と相違するところは、同図から良く理解されるように、オリフィス板２の上面の空気吹出管４ａと空気吹出管４ａとの間に不燃物抜出口（図示省略）を中心とするリング状の複数の後述する断面形状を有する砂流動防止堰堤５を同心状に設けたものである。前記砂流動防止堰堤５は何れも不燃物抜出口側に傾斜しており、砂流動防止堰堤５の先端部の流動床焼却炉の内壁に相対する面には耐熱・耐摩耗性のコバルト合金肉盛層５ａが形成されている。

【００２４】従って、砂流動防止堰堤５の存在により確実に静止砂層６ａが形成される一方、砂流動防止堰堤５が傾斜していて、不燃物の不燃物抜出口方向への移動が支障なく行われるので、本実施例は上記実施例１または２と同効である。この場合、砂流動防止堰堤５は不燃物抜出口側に傾斜しているが、砂流動防止堰堤５の先端部を不燃物抜出口側に湾曲させても良く、またリング状に形成せずに、例えば複数枚の平板を不燃物抜出口を囲むように多角形状に配設しても良い。

【００２５】なお、図３から良く理解されるように、本実施例はすり鉢状のオリフィス板２の上面に砂流動防止堰堤５を設けた例であるが、これを上記実施例２に係る下側に凸の凹面鏡状に形成したオリフィス板２に対しても設けることができるので、オリフィス板２の形状に限定されるものではない。また、本実施例では、風箱７から６５０℃もの高温空気を砂層６内に吹き込む流動床焼却炉を例として説明したが、１００℃程度の温度の空気を砂層内に吹き込む通常の流動床焼却炉に対しても、本

発明に係る技術的思想を適用することができる。

【0026】

【発明の効果】以上詳述したように、本発明の請求項1．2または3に係る流動床焼却炉によれば、炉本体の炉底に設けられるオリフィス板の上面には、従来のように耐火キャスタブルが設けられておらず、層厚の薄い静止砂層が形成されるだけだから、従来のように耐火キャスタブルに亀裂が発生したり、また耐火キャスタブルによりオリフィス板の熱膨脹が抑制されることがないから、流動床焼却炉の耐火キャスタブルに係る保全費の削減が可能になると共に、長期にわたる安定稼働が可能になるという多大な効果がある。

【図面の簡単な説明】

【図1】図1（a）は本発明の実施例1に係る高温熱風を用いる流動床焼却炉の主要部を示す断面図であり、図1（b）は図1（a）のA部拡大図である。

【図2】本発明の実施例2に係る高温熱風を用いる流動床焼却炉の主要部を示す断面図である。

【図3】本発明の実施例3に係る高温熱風を用いる流動床焼却炉の主要部を示す断面図である。

【図4】図4（a）は従来例1に係る流動床焼却炉の断面図であり、図4（b）は図4（a）のC部拡大斜視図である。

【図5】従来例2に係る流動床焼却炉の主要部断面図である。

【符号の説明】

1…炉本体

2…オリフィス板

3…不燃物抜出口

4…空気分散ノズル，4a…空気吹出管，4b…空気流入管，4c…コバルト溶射層

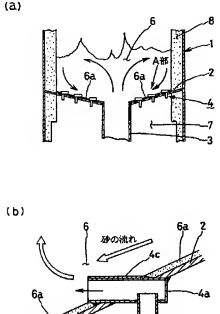
5…砂流動防止堰堤，5a…コバルト合金肉盛層

6…砂層，6a…静止砂層

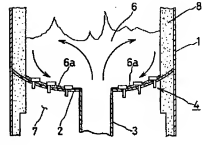
7…風箱

8…耐火材（炉内壁用）

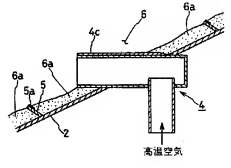
【図1】



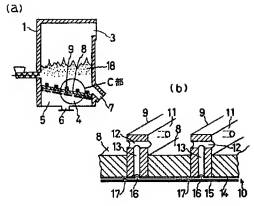
【図2】



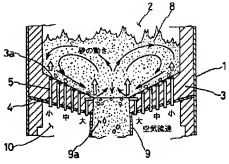
【図3】



【図4】



【図5】



フロントページの続き

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CLAIMS

[Claim(s)]
[Claim 1]Have two or more air dispersion nozzles which blow high temperature air for it being provided in a blast furnace bottom of a furnace body, supporting a sand stratum, and carrying out a convection flow of said sand stratum from a wind box which it comes to form at said blast furnace bottom bottom in this sand stratum, and burning incinerated material, and. A fluidized bed incinerator using high temperature air making an air dispersion device with which it comes to provide an incombustibles tap hole in the central part lower than a peripheral part composition of only an orifice plate which an air blast pipe of said air dispersion nozzles which blow high temperature air horizontally is joined, and consists of a heatproof and a wear-resistant metal plate.
[Claim 2]Have two or more air dispersion nozzles which blow high temperature air for it being provided in a blast furnace bottom of a furnace body, supporting a sand stratum, and carrying out a convection flow of said sand stratum from a wind box which it comes to form at said blast furnace bottom bottom in this sand stratum, and burning incinerated material, and. An air dispersion device with which it comes to provide an incombustibles tap hole in the central part lower than a peripheral part, A fluidized bed incinerator using high temperature air having composition of only an orifice plate which consists of a heatproof and a wear-resistant metal plate which an air blast pipe of said air dispersion nozzles which blow high temperature air horizontally is joined, and it comes to form in the shape of [of a convex] a concave mirror caudad.
[Claim 3]A fluidized bed incinerator using the high temperature air according to claim 1 or 2 forming a sand flow prevention barrage which becomes the upper surface of said orifice plate from a heatproof and a wear-resistant metal plate surrounding said incombustibles tap hole.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]Especially this invention belongs to the technical field concerning the fluidized bed incinerator using the high-temperature-heat wind which incinerates incinerated material, such as sludge and a municipal solid waste.
[0002]
[Description of the Prior Art]Support a sand stratum, blow air into this sand stratum, and the blast furnace bottom of the furnace body of the fluidized bed incinerator which incinerates incinerated material, such as sludge and a municipal solid waste, is made to carry out a convection flow of said sand stratum, and the air dispersion device which has two or more air dispersion nozzles which serve to burn the incinerated material thrown into this sand stratum is formed in it. Such an air dispersion device is shown, for example in JP,60-9558,Y or JP,3-122411,A.
[0003]The fluidized bed incinerator concerning the conventional example 1 which it comes to show in JP,60-9558,Y First, drawing 4 (a) of the sectional view, If it explains by the same sign written in the specification, and the name, referring to drawing 4 (b) of the C section expansion perspective view of drawing 4 (a), the air dispersion device 4 which is an air distributor is inclined and formed in the bottom inside the furnace body 1. The air chamber 5 is formed in this air dispersion device 4 bottom, and the and combustion air for a flow drawn from the air inlet 6 is taken in. As shown in drawing 3 (b), two or more air distribution blocks 9 are combined with the alcove slab 8, and this air dispersion device 4 constitutes a blast furnace bottom, equips that bottom with the perforated plate 10 (orifice plate), and is formed in it. And the exit 3 of exhaust gas is established in the upper part of the furnace body 1, and the outlet 7 which takes out incombustibles etc. is formed in the lowest position of the air dispersion device 4. The thing which it comes to support with the air dispersion device 4 is the sand stratum 18. Said alcove slab 8 and the air distribution block 9 are made from the fire refractory material, for example, the high intensity abrasion proof castable refractory containing a stainless steel fiber, etc. Although the bottom is maintained at the same flat surface as the bottom of the alcove slab 8, the upper part is projected from the alcove slab 8, the side 11 is penetrated, and the air diffuser 12 is formed almost horizontally. From the bottom of the air distribution block 9, the passage 13 which is open for free passage to the air diffuser 12 is formed. This perforated plate 10 consists of the two porous single plates 14 and 15 which separated the crevice and were supported in parallel.
The porous single plate 14 of the upper row contacts the bottom of the air distribution block 9 and the alcove slab 8, and is arranged, and the stoma 16 is formed directly under the passage 13.
It separates and the stoma 17 of the porous single plate 15 of the lower berth is arranged so that it may not lap with the perpendicular direction of the stoma 16.
[0004]Next, to the blast furnace bottom of this furnace body 1, if the fluidized bed incinerator concerning the conventional example 2 which it comes to show in JP,3-122411,A is explained by the same sign written in the specification, and the name, as shown in drawing 5 of that principal part sectional view, It is formed in the shape of an earthenware mortar, and the air distributor 3 (air

dispersion device) which has the incombustibles discharging pipe 9 is formed in the center section. This air distributor 3 comprises a fire refractory material by the side of the upper part, and an orifice plate which consists of a metal plate supporting that fire refractory material so that I may be well understood from the figure. The numerals 4 and 5 to which the lower end side which penetrates an orifice plate adheres to this orifice plate, and the upper part side penetrates a fire refractory material are air dispersion nozzles which blow the and combustion air for a flow in the wind box 10 provided in the lower part side of the furnace body 1 into the sand stratum 8 currently supported by the air distributor 3.

[0005]Therefore, even if it is in which air dispersion device and air distributor of a fluidized bed incinerator of the above, the air for the and combustion for a flow is blown into a sand stratum from a wind box. [of form] If incinerated material is thrown into the sand stratum which is flowing by this, the thrown-in incinerated material is distributed and cracked, and a pyrolysis will be carried out and it will be incinerated.

[0006]

[Problem(s) to be Solved by the Invention]The air dispersion device of the fluidized bed incinerator comprises an orifice plate which consists of metal plates, and fire-resistant castable refractory provided in the furnace inner side on it as above-mentioned. Providing fire-resistant castable refractory in the upper surface of an orifice plate aims at making it make incombustibles discharge smoothly and the temperature of the sand stratum which also amounts to 700 ** not have intermediary straw in an orifice plate directly. By the way, thermal expansion of the orifice plate is carried out with the temperature of the flow and combustion air introduced in a wind box. Like [in the case of the conventional fluidized bed incinerator], if the temperature of flow and combustion air is about 100 **, the expansion magnitude of an orifice plate is small, for example, in the case where a furnace diameter is 1750 mm, it will be about 3 mm and a problem in particular will not produce it. However, the following problems arise depending on the temperature of the flow and combustion air introduced into a wind box.

[0007]Namely, a fluidized bed incinerator which throws in auxiliary fuel for sand-stratum temperature maintenance, For example, in the sludge incinerator, the possession energy of exhaust gas is utilized from a viewpoint of saving (energy saving) of auxiliary fuel, hot flow and combustion air comes to be gradually introduced into a wind box, and flow and combustion air with a temperature of no less than 650 ** may be utilized in recent years, for example. If no less than 650 ** hot flow and combustion air is introduced into a wind box, the expansion magnitude of an orifice plate will become large, for example, can also be 20 mm in the case where a furnace diameter is 1750 mm. Since the amount of thermal expansion of a fire refractory material is only about 1 mm to it. [whether a fire refractory material is damaged according to the expansion magnitude difference of these orifice plates and a fire refractory material, and] Or the elongation of an orifice plate will be restrained with a fire refractory material, high stress will occur in an orifice plate, a crack will occur in the adherence part of a furnace body and an orifice plate by repetition of generating of high stress, and the fault that the life of a fluidized bed incinerator becomes short will arise.

[0008]If an air dispersion device is made the composition of only an orifice plate, it will be thought that the above problems are naturally solved. However, this composition is effective to a fluidized bed incinerator without an incombustibles tap hole, and unsuitable to a fluidized bed incinerator with an incombustibles tap hole. That is, it is because air dispersion nozzles are usually projected from the orifice plate to the upper part and cannot discharge incombustibles. If an air dispersion device is made the composition of only an orifice plate, a stillness sand stratum will be formed in the upper surface of an orifice plate, and heat transfer of the hot sand which attains to an orifice plate by this stillness sand stratum also at 700 ** will be controlled directly.

[0009]Therefore, the place made into the purpose of this invention is to provide the fluidized bed incinerator using the high temperature air which solved the aforementioned problem, and reduced preservation expense, and was excellent in endurance.

[0010]

[Means for Solving the Problem]In order to solve an aforementioned problem, a means which an air dispersion device of a fluidized bed incinerator using high temperature air concerning claim 1 of this

invention adopted, Have two or more air dispersion nozzles which blow high temperature air for it being provided in a blast furnace bottom of a furnace body, supporting a sand stratum, and carrying out a convection flow of said sand stratum from a wind box which it comes to form at said blast furnace bottom bottom in this sand stratum, and burning incinerated material, and. An air blast pipe of said air dispersion nozzles which blow high temperature air horizontally was joined, and an air dispersion device with which it comes to provide an incombustibles tap hole in the central part lower than a peripheral part was made composition of only an orifice plate which consists of a heatproof and a wear-resistant metal plate.

[0011]A means which an air dispersion device of a fluidized bed incinerator using high temperature air concerning claim 2 of this invention adopted, Have two or more air dispersion nozzles which blow high temperature air for it being provided in a blast furnace bottom of a furnace body, supporting a sand stratum, and carrying out a convection flow of said sand stratum from a wind box which it comes to form at said blast furnace bottom bottom in this sand stratum, and burning incinerated material, and. An air dispersion device with which it comes to provide an incombustibles tap hole in the central part lower than a peripheral part, An air blast pipe of said air dispersion nozzles which blow high temperature air horizontally was joined, and it had composition of only an orifice plate which consists of a heatproof and a wear-resistant metal plate which it comes to form in the shape of [of a convex] a concave mirror caudad.

[0012]A means which an air dispersion device of a fluidized bed incinerator using high temperature air concerning claim 3 of this invention adopted, In a fluidized bed incinerator using the high temperature air according to claim 1 or 2, a sand flow prevention barrage which consists of a heatproof and a wear-resistant metal plate surrounding [the upper surface of said orifice plate] said incombustibles tap hole was formed.

[0013]

[Embodiment of the Invention]If this invention forms an orifice plate from a heatproof and a wear-resistant metal plate and the projection amount to the upper part of the orifice plate of air dispersion nozzles is lessened, A flow of a sand stratum is not barred, and moreover may make a sand stop layer form in the upper surface of an orifice plate, and. It is thought that the fluidized bed incinerator which has the high durability life provided with the function to move incombustibles to an incombustibles outlet can be embodied, A fluidized bed incinerator is provided by the blast furnace bottom of a furnace body, support a sand stratum, and a convection flow of said sand stratum is carried out from the wind box which it comes to form at said blast furnace bottom bottom in this sand stratum, And have two or more air dispersion nozzles which blow high temperature air for burning incinerated material, and. The air blast pipe of said air dispersion nozzles which blow high temperature air horizontally is joined, and the air dispersion device with which it comes to provide an incombustibles tap hole in the central part lower than a peripheral part is made the composition of only the orifice plate which consists of a heatproof and a wear-resistant metal plate.

[0014]

[Example]It explains referring to drawing 1 (a) of the sectional view showing the principal part for the fluidized bed incinerator using the high-temperature-heat wind concerning Example 1 of this invention hereafter, and drawing 1 (b) of the A section enlarged drawing of drawing 1 (a).

[0015]That is, the numerals 1 shown in drawing 1 (a) are the furnace bodies of the fluidized bed incinerator in which a wall comes to stretch the fire refractory material 8, the sand stratum 6 is supported to the blast furnace bottom of this furnace body 1, and the orifice plate 2 of the shape of a shallow earthenware mortar which has the incombustibles tap hole 3 which extracts incombustibles in the center section of the lower position is most formed in it. This orifice plate 2 is formed from the heatproof and the wear-resistant metal plate which consists of what etc. carried out the padding of the cobalt system alloy, for example to heat-resistant alloys, such as Incoloy, and the air dispersion nozzles 4 which become two or more composition mentioned later are formed in this. The wind box 7 which flows from the air current inlet which no less than 650 ** high temperature air does not illustrate, for example is formed in said blast furnace bottom bottom. Since the temperature of high temperature air is what is

obtained with the temperature of the exhaust gas of a fluidized bed incinerator, at the time of the start up of a fluidized bed incinerator, it is low temperature, but it is raised gradually, and if it will be in a stable operation state, it will be raised to temperature as high as 650 **.

[0016]Said air dispersion nozzles 4 penetrate the orifice plate 2, and are horizontally joined by welding. These air dispersion nozzles 4 have an outlet which blows off high temperature air toward the central direction of the furnace body 1, and have the cobalt sprayed layers 4c (abrasion proof layer) in the upper part peripheral surface by the side of the sand stratum 6, and. It protrudes on the air blast pipe 4a with which it comes to lid the projection-into wind box 7 side, and this air blast pipe 4a for lower parts, and comprises the air inhalant canal 4b into which high temperature air in the wind box 7 flows.

The air blast pipe 4a and the air inhalant canal 4b are all said orifice plate 2 and same material.

Wear of the air blast pipe 4a by the sand of the sand stratum 6 which carries out a convection flow is controlled by the cobalt sprayed layers 4c.

[0017]Therefore, the sand of the sand stratum 6 carries out a rise flow in the center section of the orifice plate 2 by the high temperature air which the high temperature air which flowed into the air inhalant canal 4b blows off from the air blast pipe 4a toward the central direction of the furnace body 1, and blows off from the inside of the wind box 7, and, subsequently to the direction of a wall of the furnace body 1, a level flow is carried out. And a downward flow is carried out with the wall of the furnace body 1, and if it flows in the direction of the incombustibles tap hole 3 with the orifice plate 2, a convection flow will be carried out that it will be. Thus, if incinerated material, such as sludge and a municipal solid waste, is thrown into the sand stratum 6 which is carrying out a convection flow, incinerated material is distributed and cracked, a pyrolysis is carried out and it is destroyed by fire, and incombustibles will be carried to the incombustibles tap hole 3 side with the sand of the sand stratum 6 which carries out a convection flow, and they will be discharged out of a system from this incombustibles tap hole 3.

[0018]Although incinerated material, such as sludge and a municipal solid waste, is carried out in this way and it is destroyed by fire, Since the thin stillness sand stratum 6a of thickness is formed over the upper surface of the orifice plate 2 on the occasion of a convection flow of the sand of the sand stratum 6 as shown in drawing 1 (a), Even if not covered by fire-resistant castable refractory like before, an elevated temperature was not directly transmitted from the sand stratum 6 which carries out a convection flow, and on the upper surface of the orifice plate 2, some air blast pipes 4a of the air dispersion nozzles 4 have only projected, And since the projection part is level, movement in the slanting lower part of incombustibles is not checked, and incombustibles are discharged convenient from the incombustibles tap hole 3.

[0019]In order to make the stillness sand stratum 6a form effectively, without barring a convection flow of the sand stratum 6, it is preferred that the angle of gradient of the orifice plate 2 shall be about 15 degrees. Also although it is called the stillness sand stratum 6a, since it sometimes flows primarily, the orifice plate 2 is worn out, but since this orifice plate 2 is formed from the heatproof and the wear-resistant metal plate as above-mentioned, that endurance is enough practically.

[0020]On the other hand, although the orifice plate 2 is exposed to high temperature air with a temperature of no less than at least 650 ** and thermal expansion is carried out, Since fire-resistant castable refractory is not provided in the upper surface of the orifice plate 2 like before but the thin stillness sand stratum 6a of thickness is only formed, fire-resistant castable refractory does not receive damage. Since the fire-resistant castable refractory which restrains the thermal expansion of the orifice plate 2 is not provided as above-mentioned, high stress does not occur in the orifice plate 2, and it does not have an adverse effect on the life of a fluidized bed incinerator. Since only the part which is equivalent to the thickness of fire-resistant castable refractory at least can make the overall height of the furnace body 1 low, It can contribute to the miniaturization of a fluidized bed incinerator, and can contribute to improvement in the operation availability of the fluidized bed incinerator accompanying reduction of the preservation expense of fire-resistant castable refractory, and shortening of the preservation time required.

[0021]Next, the place whose this example is different from the above-mentioned example if it explains referring to drawing 2 of the sectional view showing the principal part for the fluidized bed incinerator

using the high-temperature-heat wind concerning Example 2 of this invention, The shape of the orifice plate 2 is formed in the bottom in the shape of [of a convex] a concave mirror, and it completely becomes the composition with the fluidized bed incinerator concerning the above-mentioned example except this so that I may be well understood from the figure.

[0022]Therefore, the stillness sand stratum 6a is formed in the upper surface of said orifice plate 2, and since some air blast pipes 4a of the air dispersion nozzles 4 have only projected on the upper surface of the orifice plate 2, this examples are the above-mentioned example and the effect. However, in this example, since the orifice plate 2 is formed in the bottom in the shape of [of the convex] a concave mirror as above-mentioned, the mobility of the sand of the sand stratum 6 is improved, and even if metaphor board thickness is the same, there is an advantage that the orifice plate 2 becomes high intensity.

[0023]If it explains referring to drawing 3 of the sectional view showing the principal part for the fluidized bed incinerator using the high-temperature-heat wind concerning Example 3 of this invention, the place where this example is different from the above-mentioned example, The sand flow prevention barrage 5 which has the sectional shape of the plurality of the ring shape centering on an incombustibles tap hole (graphic display abbreviation) mentioned later is concentrically formed between the air blast pipe 4a of the upper surface of the orifice plate 2, and the air blast pipe 4a so that I may be well understood from the figure. Said sand flow prevention barrage 5 all inclines in the incombustibles tap hole side, and the heat-resistant and wear-resistant cobalt alloy welding layer 5a is formed in the field which faces the wall of the fluidized bed incinerator of the tip part of the sand flow prevention barrage 5.

[0024]Therefore, since the sand flow prevention barrage 5 inclines and movement in the direction of an incombustibles tap hole of incombustibles is performed convenient while the stillness sand stratum 6a is certainly formed by existence of the sand flow prevention barrage 5, this examples are the above-mentioned Example 1 or 2 and the effect. In this case, although the sand flow prevention barrage 5 inclines in the incombustibles tap hole side, the plate of two or more sheets may be allocated in polygonal shape, for example, without incurvating the tip part of the sand flow prevention barrage 5 to the incombustibles tap hole side, and forming in ring shape so that an incombustibles tap hole may be surrounded.

[0025]As well understood from drawing 3, this example is an example which formed the sand flow prevention barrage 5 in the upper surface of the earthenware mortar-like orifice plate 2, but. Since this can be provided in the bottom concerning the above-mentioned Example 2 also to the orifice plate 2 formed in the shape of [of the convex] a concave mirror, it is not limited to the shape of the orifice plate 2. Although this example explained as an example the fluidized bed incinerator which blows no less than 650 ** high temperature air into the sand stratum 6 from the wind box 7, the technical idea concerning this invention is applicable also to the usual fluidized bed incinerator which blows air with a temperature of about 100 ** into a sand stratum.

[0026]

[Effect of the Invention]As explained in full detail above, according to the fluidized bed incinerator concerning claim 1.2 or 3 of this invention, on the upper surface of the orifice plate formed in the blast furnace bottom of a furnace body. As fire-resistant castable refractory is not provided like before but the thin stillness sand stratum of thickness is formed therefore, Since a crack does not occur in fire-resistant castable refractory like before and the thermal expansion of an orifice plate is not controlled by fire-resistant castable refractory, reduction of the preservation expense concerning the fire-resistant castable refractory of a fluidized bed incinerator is attained, and there is a great effect that the stable operation over a long period of time becomes possible.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention]Especially this invention belongs to the technical field concerning the fluidized bed incinerator using the high-temperature-heat wind which incinerates incinerated material, such as sludge and a municipal solid waste.

[Translation done.]

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PRIOR ART

[Description of the Prior Art]Support a sand stratum, blow air into this sand stratum, and the blast furnace bottom of the furnace body of the fluidized bed incinerator which incinerates incinerated material, such as sludge and a municipal solid waste, is made to carry out a convection flow of said sand stratum, and the air dispersion device which has two or more air dispersion nozzles which serve to burn the incinerated material thrown into this sand stratum is formed in it. Such an air dispersion device is shown, for example in JP,60-9558,Y or JP,3-122411,A.
[0003]The fluidized bed incinerator concerning the conventional example 1 which it comes to show in JP,60-9558,Y First, drawing 4 (a) of the sectional view, If it explains by the same sign written in the specification, and the name, referring to drawing 4 (b) of the C section expansion perspective view of drawing 4 (a), the air dispersion device 4 which is an air distributor is inclined and formed in the bottom inside the furnace body 1. The air chamber 5 is formed in this air dispersion device 4 bottom, and the and combustion air for a flow drawn from the air inlet 6 is taken in. As shown in drawing 3 (b), two or more air distribution blocks 9 are combined with the alcove slab 8, and this air dispersion device 4 constitutes a blast furnace bottom, equips that bottom with the perforated plate 10 (orifice plate), and is formed in it. And the exit 3 of exhaust gas is established in the upper part of the furnace body 1, and the outlet 7 which takes out incombustibles etc. is formed in the lowest position of the air dispersion device 4. The thing which it comes to support with the air dispersion device 4 is the sand stratum 18. Said alcove slab 8 and the air distribution block 9 are made from the fire refractory material, for example, the high intensity abrasion proof castable refractory containing a stainless steel fiber, etc. Although the bottom is maintained at the same flat surface as the bottom of the alcove slab 8, the upper part is projected from the alcove slab 8, the side 11 is penetrated, and the air diffuser 12 is formed almost horizontally. From the bottom of the air distribution block 9, the passage 13 which is open for free passage to the air diffuser 12 is formed. This perforated plate 10 consists of the two porous single plates 14 and 15 which separated the crevice and were supported in parallel.
The porous single plate 14 of the upper row contacts the bottom of the air distribution block 9 and the alcove slab 8, and is arranged, and the stoma 16 is formed directly under the passage 13.
It separates and the stoma 17 of the porous single plate 15 of the lower berth is arranged so that it may not lap with the perpendicular direction of the stoma 16.
[0004]Next, to the blast furnace bottom of this furnace body 1, if the fluidized bed incinerator concerning the conventional example 2 which it comes to show in JP,3-122411,A is explained by the same sign written in the specification, and the name, as shown in drawing 5 of that principal part sectional view, It is formed in the shape of an earthenware mortar, and the air distributor 3 (air dispersion device) which has the incombustibles discharging pipe 9 is formed in the center section. This air distributor 3 comprises a fire refractory material by the side of the upper part, and an orifice plate which consists of a metal plate supporting that fire refractory material so that I may be well understood from the figure. The numerals 4 and 5 to which the lower end side which penetrates an orifice plate adheres to this orifice plate, and the upper part side penetrates a fire refractory material are air dispersion nozzles which blow the and combustion air for a flow in the wind box 10 provided in the lower part side

of the furnace body 1 into the sand stratum 8 currently supported by the air distributor 3.
[0005]Therefore, even if it is in which air dispersion device and air distributor of a fluidized bed incinerator of the above, the air for the and combustion for a flow is blown into a sand stratum from a wind box. [of form] If incinerated material is thrown into the sand stratum which is flowing by this, the thrown-in incinerated material is distributed and cracked, and a pyrolysis will be carried out and it will be incinerated.

[Translation done.]

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EFFECT OF THE INVENTION

[Effect of the Invention]As explained in full detail above, according to the fluidized bed incinerator concerning claim 1.2 or 3 of this invention, on the upper surface of the orifice plate formed in the blast furnace bottom of a furnace body. As fire-resistant castable refractory is not provided like before but the thin stillness sand stratum of thickness is formed therefore, Since a crack does not occur in fire-resistant castable refractory like before and the thermal expansion of an orifice plate is not controlled by fire-resistant castable refractory, reduction of the preservation expense concerning the fire-resistant castable refractory of a fluidized bed incinerator is attained, and there is a great effect that the stable operation over a long period of time becomes possible.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention]The air dispersion device of the fluidized bed incinerator comprises an orifice plate which consists of metal plates, and fire-resistant castable refractory provided in the furnace inner side on it as above-mentioned. Providing fire-resistant castable refractory in the upper surface of an orifice plate aims at making it make incombustibles discharge smoothly and the temperature of the sand stratum which also amounts to 700 ** not have intermediary straw in an orifice plate directly. By the way, thermal expansion of the orifice plate is carried out with the temperature of the flow and combustion air introduced in a wind box. Like [in the case of the conventional fluidized bed incinerator], if the temperature of flow and combustion air is about 100 **, the expansion magnitude of an orifice plate is small, for example, in the case where a furnace diameter is 1750 mm, it will be about 3 mm and a problem in particular will not produce it. However, the following problems arise depending on the temperature of the flow and combustion air introduced into a wind box.
[0007]Namely, a fluidized bed incinerator which throws in auxiliary fuel for sand-stratum temperature maintenance, For example, in the sludge incinerator, the possession energy of exhaust gas is utilized from a viewpoint of saving (energy saving) of auxiliary fuel, hot flow and combustion air comes to be gradually introduced into a wind box, and flow and combustion air with a temperature of no less than 650 ** may be utilized in recent years, for example. If no less than 650 ** hot flow and combustion air is introduced into a wind box, the expansion magnitude of an orifice plate will become large, for example, can also be 20 mm in the case where a furnace diameter is 1750 mm. Since the amount of thermal expansion of a fire refractory material is only about 1 mm to it. [whether a fire refractory material is damaged according to the expansion magnitude difference of these orifice plates and a fire refractory material, and] Or the elongation of an orifice plate will be restrained with a fire refractory material, high stress will occur in an orifice plate, a crack will occur in the adherence part of a furnace body and an orifice plate by repetition of generating of high stress, and the fault that the life of a fluidized bed incinerator becomes short will arise.
[0008]If an air dispersion device is made the composition of only an orifice plate, it will be thought that the above problems are naturally solved. However, this composition is effective to a fluidized bed incinerator without an incombustibles tap hole, and unsuitable to a fluidized bed incinerator with an incombustibles tap hole. That is, it is because air dispersion nozzles are usually projected from the orifice plate to the upper part and cannot discharge incombustibles. If an air dispersion device is made the composition of only an orifice plate, a stillness sand stratum will be formed in the upper surface of an orifice plate, and heat transfer of the hot sand which attains to an orifice plate by this stillness sand stratum also at 700 ** will be controlled directly.
[0009]Therefore, the place made into the purpose of this invention is to provide the fluidized bed incinerator using the high temperature air which solved the aforementioned problem, and reduced preservation expense, and was excellent in endurance.

[Translation done.]

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MEANS

[Means for Solving the Problem]In order to solve an aforementioned problem, a means which an air dispersion device of a fluidized bed incinerator using high temperature air concerning claim 1 of this invention adopted, Have two or more air dispersion nozzles which blow high temperature air for it being provided in a blast furnace bottom of a furnace body, supporting a sand stratum, and carrying out a convection flow of said sand stratum from a wind box which it comes to form at said blast furnace bottom bottom in this sand stratum, and burning incinerated material, and. An air blast pipe of said air dispersion nozzles which blow high temperature air horizontally was joined, and an air dispersion device with which it comes to provide an incombustibles tap hole in the central part lower than a peripheral part was made composition of only an orifice plate which consists of a heatproof and a wear-resistant metal plate.
[0011]A means which an air dispersion device of a fluidized bed incinerator using high temperature air concerning claim 2 of this invention adopted, Have two or more air dispersion nozzles which blow high temperature air for it being provided in a blast furnace bottom of a furnace body, supporting a sand stratum, and carrying out a convection flow of said sand stratum from a wind box which it comes to form at said blast furnace bottom bottom in this sand stratum, and burning incinerated material, and. An air dispersion device with which it comes to provide an incombustibles tap hole in the central part lower than a peripheral part, An air blast pipe of said air dispersion nozzles which blow high temperature air horizontally was joined, and it had composition of only an orifice plate which consists of a heatproof and a wear-resistant metal plate which it comes to form in the shape of [of a convex] a concave mirror caudad.
[0012]A means which an air dispersion device of a fluidized bed incinerator using high temperature air concerning claim 3 of this invention adopted, In a fluidized bed incinerator using the high temperature air according to claim 1 or 2, a sand flow prevention barrage which consists of a heatproof and a wear-resistant metal plate surrounding [the upper surface of said orifice plate] said incombustibles tap hole was formed.
[0013]
[Embodiment of the Invention]If this invention forms an orifice plate from a heatproof and a wear-resistant metal plate and the projection amount to the upper part of the orifice plate of air dispersion nozzles is lessened, A flow of a sand stratum is not barred, and moreover may make a sand stop layer form in the upper surface of an orifice plate, and. It is thought that the fluidized bed incinerator which has the high durability life provided with the function to move incombustibles to an incombustibles outlet can be embodied, A fluidized bed incinerator is provided by the blast furnace bottom of a furnace body, support a sand stratum, and a convection flow of said sand stratum is carried out from the wind box which it comes to form at said blast furnace bottom bottom in this sand stratum, And have two or more air dispersion nozzles which blow high temperature air for burning incinerated material, and. The air blast pipe of said air dispersion nozzles which blow high temperature air horizontally is joined, and the air dispersion device with which it comes to provide an incombustibles tap hole in the central part lower than a peripheral part is made the composition of only the orifice plate which consists of a

heatproof and a wear-resistant metal plate.

[Translation done.]

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EXAMPLE

[Example]It explains referring to drawing 1 (a) of the sectional view showing the principal part for the fluidized bed incinerator using the high-temperature-heat wind concerning Example 1 of this invention hereafter, and drawing 1 (b) of the A section enlarged drawing of drawing 1 (a).
[0015]That is, the numerals 1 shown in drawing 1 (a) are the furnace bodies of the fluidized bed incinerator in which a wall comes to stretch the fire refractory material 8, the sand stratum 6 is supported to the blast furnace bottom of this furnace body 1, and the orifice plate 2 of the shape of a shallow earthenware mortar which has the incombustibles tap hole 3 which extracts incombustibles in the center section of the lower position is most formed in it. This orifice plate 2 is formed from the heatproof and the wear-resistant metal plate which consists of what etc. carried out the padding of the cobalt system alloy, for example to heat-resistant alloys, such as Incoloy, and the air dispersion nozzles 4 which become two or more composition mentioned later are formed in this. The wind box 7 which flows from the air current inlet which no less than 650 ** high temperature air does not illustrate, for example is formed in said blast furnace bottom bottom. Since the temperature of high temperature air is what is obtained with the temperature of the exhaust gas of a fluidized bed incinerator, at the time of the start up of a fluidized bed incinerator, it is low temperature, but it is raised gradually, and if it will be in a stable operation state, it will be raised to temperature as high as 650 **.
[0016]Said air dispersion nozzles 4 penetrate the orifice plate 2, and are horizontally joined by welding. These air dispersion nozzles 4 have an outlet which blows off high temperature air toward the central direction of the furnace body 1, and have the cobalt sprayed layers 4c (abrasion proof layer) in the upper part peripheral surface by the side of the sand stratum 6, and. It protrudes on the air blast pipe 4a with which it comes to lid the projection-into wind box 7 side, and this air blast pipe 4a for lower parts, and comprises the air inhalant canal 4b into which high temperature air in the wind box 7 flows.
The air blast pipe 4a and the air inhalant canal 4b are all said orifice plate 2 and same material.
Wear of the air blast pipe 4a by the sand of the sand stratum 6 which carries out a convection flow is controlled by the cobalt sprayed layers 4c.
[0017]Therefore, the sand of the sand stratum 6 carries out a rise flow in the center section of the orifice plate 2 by the high temperature air which the high temperature air which flowed into the air inhalant canal 4b blows off from the air blast pipe 4a toward the central direction of the furnace body 1, and blows off from the inside of the wind box 7, and, subsequently to the direction of a wall of the furnace body 1, a level flow is carried out. And a downward flow is carried out with the wall of the furnace body 1, and if it flows in the direction of the incombustibles tap hole 3 with the orifice plate 2, a convection flow will be carried out that it will be. Thus, if incinerated material, such as sludge and a municipal solid waste, is thrown into the sand stratum 6 which is carrying out a convection flow, incinerated material is distributed and cracked, a pyrolysis is carried out and it is destroyed by fire, and incombustibles will be carried to the incombustibles tap hole 3 side with the sand of the sand stratum 6 which carries out a convection flow, and they will be discharged out of a system from this incombustibles tap hole 3.
[0018]Although incinerated material, such as sludge and a municipal solid waste, is carried out in this way and it is destroyed by fire, Since the thin stillness sand stratum 6a of thickness is formed over the

upper surface of the orifice plate 2 on the occasion of a convection flow of the sand of the sand stratum 6 as shown in drawing 1 (a), Even if not covered by fire-resistant castable refractory like before, an elevated temperature was not directly transmitted from the sand stratum 6 which carries out a convection flow, and on the upper surface of the orifice plate 2, some air blast pipes 4a of the air dispersion nozzles 4 have only projected, And since the projection part is level, movement in the slanting lower part of incombustibles is not checked, and incombustibles are discharged convenient from the incombustibles tap hole 3.

[0019]In order to make the stillness sand stratum 6a form effectively, without barring a convection flow of the sand stratum 6, it is preferred that the angle of gradient of the orifice plate 2 shall be about 15 degrees. Also although it is called the stillness sand stratum 6a, since it sometimes flows primarily, the orifice plate 2 is worn out, but since this orifice plate 2 is formed from the heatproof and the wear-resistant metal plate as above-mentioned, that endurance is enough practically.

[0020]On the other hand, although the orifice plate 2 is exposed to high temperature air with a temperature of no less than at least 650 ** and thermal expansion is carried out, Since fire-resistant castable refractory is not provided in the upper surface of the orifice plate 2 like before but the thin stillness sand stratum 6a of thickness is only formed, fire-resistant castable refractory does not receive damage. Since the fire-resistant castable refractory which restrains the thermal expansion of the orifice plate 2 is not provided as above-mentioned, high stress does not occur in the orifice plate 2, and it does not have an adverse effect on the life of a fluidized bed incinerator. Since only the part which is equivalent to the thickness of fire-resistant castable refractory at least can make the overall height of the furnace body 1 low, It can contribute to the miniaturization of a fluidized bed incinerator, and can contribute to improvement in the operation availability of the fluidized bed incinerator accompanying reduction of the preservation expense of fire-resistant castable refractory, and shortening of the preservation time required.

[0021]Next, the place whose this example is different from the above-mentioned example if it explains referring to drawing 2 of the sectional view showing the principal part for the fluidized bed incinerator using the high-temperature-heat wind concerning Example 2 of this invention, The shape of the orifice plate 2 is formed in the bottom in the shape of [of a convex] a concave mirror, and it completely becomes the composition with the fluidized bed incinerator concerning the above-mentioned example except this so that I may be well understood from the figure.

[0022]Therefore, the stillness sand stratum 6a is formed in the upper surface of said orifice plate 2, and since some air blast pipes 4a of the air dispersion nozzles 4 have only projected on the upper surface of the orifice plate 2, this examples are the above-mentioned example and the effect. However, in this example, since the orifice plate 2 is formed in the bottom in the shape of [of the convex] a concave mirror as above-mentioned, the mobility of the sand of the sand stratum 6 is improved, and even if metaphor board thickness is the same, there is an advantage that the orifice plate 2 becomes high intensity.

[0023]If it explains referring to drawing 3 of the sectional view showing the principal part for the fluidized bed incinerator using the high-temperature-heat wind concerning Example 3 of this invention, the place where this example is different from the above-mentioned example, The sand flow prevention barrage 5 which has the sectional shape of the plurality of the ring shape centering on an incombustibles tap hole (graphic display abbreviation) mentioned later is concentrically formed between the air blast pipe 4a of the upper surface of the orifice plate 2, and the air blast pipe 4a so that I may be well understood from the figure. Said sand flow prevention barrage 5 all inclines in the incombustibles tap hole side, and the heat-resistant and wear-resistant cobalt alloy welding layer 5a is formed in the field which faces the wall of the fluidized bed incinerator of the tip part of the sand flow prevention barrage 5.

[0024]Therefore, since the sand flow prevention barrage 5 inclines and movement in the direction of an incombustibles tap hole of incombustibles is performed convenient while the stillness sand stratum 6a is certainly formed by existence of the sand flow prevention barrage 5, this examples are the above-mentioned Example 1 or 2 and the effect. In this case, although the sand flow prevention barrage 5

inclines in the incombustibles tap hole side, the plate of two or more sheets may be allocated in polygonal shape, for example, without incurvating the tip part of the sand flow prevention barrage 5 to the incombustibles tap hole side, and forming in ring shape so that an incombustibles tap hole may be surrounded.

[0025]As well understood from drawing 3, this example is an example which formed the sand flow prevention barrage 5 in the upper surface of the earthenware mortar-like orifice plate 2, but. Since this can be provided in the bottom concerning the above-mentioned Example 2 also to the orifice plate 2 formed in the shape of [of the convex] a concave mirror, it is not limited to the shape of the orifice plate 2. Although this example explained as an example the fluidized bed incinerator which blows no less than 650 ** high temperature air into the sand stratum 6 from the wind box 7, the technical idea concerning this invention is applicable also to the usual fluidized bed incinerator which blows air with a temperature of about 100 ** into a sand stratum.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]Drawing 1 (a) is a sectional view showing the principal part of the fluidized bed incinerator using the high-temperature-heat wind concerning Example 1 of this invention, and drawing 1 (b) is the A section enlarged drawing of drawing 1 (a).
[Drawing 2]It is a sectional view showing the principal part of the fluidized bed incinerator using the high-temperature-heat wind concerning Example 2 of this invention.
[Drawing 3]It is a sectional view showing the principal part of the fluidized bed incinerator using the high-temperature-heat wind concerning Example 3 of this invention.
[Drawing 4]Drawing 4 (a) is a sectional view of the fluidized bed incinerator concerning the conventional example 1, and drawing 4 (b) is the C section expansion perspective view of drawing 4 (a).

[Drawing 5]It is a principal part sectional view of the fluidized bed incinerator concerning the conventional example 2.
[Description of Notations]
1 -- Furnace body
2 -- Orifice plate
3 -- Incombustibles tap hole
4 [-- Cobalt sprayed layers] -- Air dispersion nozzles, 4a -- An air blast pipe, 4b -- An air inhalant canal, 4c
5 -- A sand flow prevention barrage, 5a -- Cobalt alloy welding layer
6 -- A sand stratum, 6a -- Stillness sand stratum
7 -- Wind box
8 -- Fire refractory material (for inner walls of the kiln)

[Translation done.]

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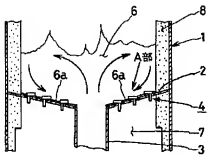
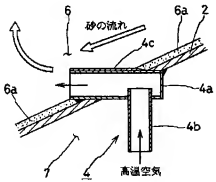
DRAWINGS

[Drawing 1]

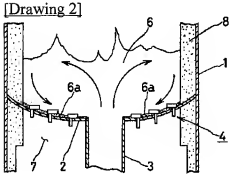
(a)



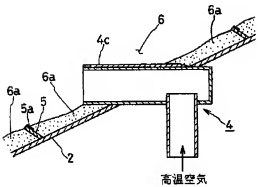
(b)



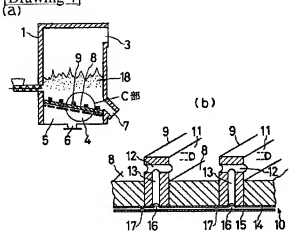
[Drawing 2]



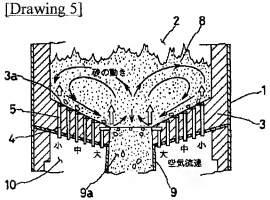
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]